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COMMENTS TO FCC ET DOCKET No. 94-32

Submitted by

TADIRAN TELECOMMUNICATIONS LTD

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1. Introduction

Tadiran is a worldwide supplier of telecommunication equipment for public and private applications. In recent years the company has been involved in the design and fielding of advanced wireless systems.

The company manufactures a modern Wireless Local Loop system, MultiGain Wireless, intended for public wireless access applications and of a Wireless PBX system, WaveLine, which operates in the ISM band of 2.4 GHz. Both systems utilize the company's well proven spread spectrum frequency hopping technology. This technology was evaluated as part of U S WEST Advanced Technologies' PCS trials in Boulder, Colorado (see U S WEST Wireless Personal Communications Experiments, Quarterly Progress Report, FCC Experimental Licenses KK2XCC and KK2XCD submitted to FCC on March 5, 1993).

As equipment supplier of wireless local loop systems as well as ISM equipment for unlicensed applications Tadiran offers its comments and suggestions to FCC ET Docket No. 94-32.

2. Proposed Band Application

- a. Tadiran proposes that the spectrum released in the bands 2390-2400 MHz and 2402-2417 MHz and possibly the 2300-2310 MHz be assigned to wireless local loop (WLL) applications.

These applications should be restricted to use by digital, spread spectrum, high performance systems capable of providing added value telecommunications services in urban, suburban and rural areas.

- b. Tadiran also suggests that the 4,660-4,685 MHz band be set aside for in-building applications, pending further propagation experiments.

3. Types of Services

The services provided in the bands defined in 2.a. above will be offered to residential communities as well as business users and will serve as direct replacement for traditional wired interconnection to the public telecommunications network. These services should include:

- High grade, toll voice quality telephone services.
- Voice band and higher rate data services.
- ISDN services.
- Neighborhood mobility.
- Limited video distribution.

The spectrum assigned to these services should allow serving communities at initial capacities of 1000 to 2000 wireless users.

4. Proposed Spectrum Allocation

Tadiran suggests that spectrum will be allocated and reallocated in phases. Deployment of equipment will be immediate.

Tadiran suggests that the phases be defined as follows:

Phase I

This phase should be evoked immediately. Wireless Local Loop equipment will be deployed operating in the frequency bands of 2,390-2,400 and 2,402-2,417 MHz.

During this phase all equipment currently operating in the 2,400-2,483.5 MHz ISM band will be gradually refurbished to vacate the 2,402-2,417 MHz band. Part 15 Ruling will be modified to require all new equipment to operate in the restricted band of 2,418-2,483.5 MHz.

This approach seems practical at this early stage of deployment of 2.4 GHz ISM equipment as the number of systems currently operating in this band is still relatively small.

Phase II

When the 2,300-2,310 MHz band is vacated for operation it will be reassigned for use in Wireless Local Loop applications to provide additional capacity for the increased demand which is expected to be generated at that time.

5. System Requirements

The systems using the reassigned frequency bands should be required to meet the following objectives:

a. Coexistence with other systems.

The spectrum allocation and equipment characteristics should allow system deployment during the proposed Phase I without the need to vacate first the bands presently in use by other systems. Systems should be capable of operation in parts of the frequency bands in order to minimize interference.

The equipment should be able to operate in the assigned service areas in a way which will not interfere with other systems being used in these areas.

b. Provision of service.

The system used in the new allocated frequency bands should provide the services as specified in Section 3 above efficiently and cost effectively. The allocated spectrum should allow the system to serve the user capacities as defined in that section in relatively small-sized radio cells.

6. Technical Characteristics

To meet the system requirements Tadiran suggests that the equipment and systems which will be authorized to use this new frequency allocation will meet the following characteristics:

- a. The equipment will allow immediate deployment in Phase I of the spectrum allocation of the 2,300-2,310 MHz, 2,390-2,400 MHz and 2,402-2,417 MHz bands or any part thereof. To meet the initial capacity requirements each service area will be allowed to use 15-25 MHz out of these bands. Equipment will have built-in capability for flexible assignment of operating frequencies for partial use of these spectrum bands.

- b. The system will meet the requirements for low power (up to 1 Watt), spread spectrum equipment as defined in the FCC Part 15 Ruling for ISM equipment.

Such performance will allow the system to coexist during Phase I of the spectrum allocation in the 2,402 to 2,417 MHz band with unlicensed equipment designed to meet the ISM requirements without major interference to their operation and allow sufficient area coverage by the base stations.

The use of spread spectrum techniques will also provide built-in immunity of the WLL systems from interference generated by the ISM equipment, thus assuring high performance of the radio links.

In addition this will not impair the operation of the amateur systems used in the specified frequency bands.

- c. The system will use advanced digital techniques which will assure that it can provide the services at the same or better quality than wireline access connections and will facilitate embedding of special measures for privacy.

- d. The Common Air Interface standard will be unrestricted to allow the emergence of novel, efficient access technologies. Nationwide CAI standardization is not required in fixed or nearly fixed applications.

However, to allow flexibility of frequency assignment as defined in 6.a above equipment will be required to use Time Division Duplexing rather than Frequency Division Duplexing methods. This will eliminate the need to use paired frequencies for frequency planning.

Also, provisions for neighborhood mobility should be embedded in the CAI.